

Supplementary information

A microfluidic device inspired by the leaky tumor vessels for hematogenous metastasis mechanism research

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Supplementary information S1: Materials and reagents.

For device fabrication: Polydimethylsiloxane (PDMS) and its curing agent (Sylgard 184, Dow Corning, USA); BN303 negative photoresist and its developer (Microchem, USA); SU-8 negative photoresist and its developer (Microchem, USA); polymethylmethacrylate (PMMA) plate (Asahi Kasei Corporation, Japan); polycarbonate (PC) porous membrane (Dow Corning, USA); 3-Aminopropyltriethoxysilane (APTES) (98%, J&K Scientific, China). For hydrogel preparation: Agarose (meilunbio, China); gelatin (meilunbio, China); For cell culture: U-2OS cells (Cell Bank of the Chinese Academy of Sciences, China); Dulbecco's Modified Eagle Media (Gibco, USA); fetal bovine serum (Gibco, USA); penicillin and streptomycin (Gibco, USA); pancreatin (0.25% Trypsin and 1mM EDTA) (Saituo biology, China); PBS buffer solution (Aldrich, USA); CellTracker™ CM-Dil (Invitrogen, USA).

Supplementary information S2: Mesh refinement.

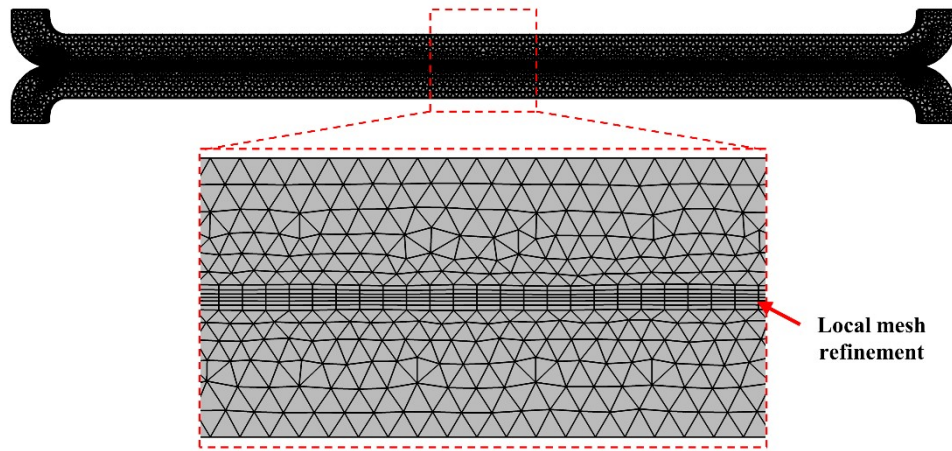


Fig. S1 The local mesh refinement of the model.

Supplementary information S3: Structure of the gelatin hydrogel.

Gelatin hydrogel is used to reproduce the extracellular matrix (ECM) for its good biocompatibility and degradability. In order to increase the stiffness, 1.5% (w/v) agarose is added in the 10% (w/v) gelatin hydrogel. The freeze drying method is used to represent the gelatin hydrogel structure, and scanning electronic microscope shows that the material has porous structure and is suitable for cell growth and migration.

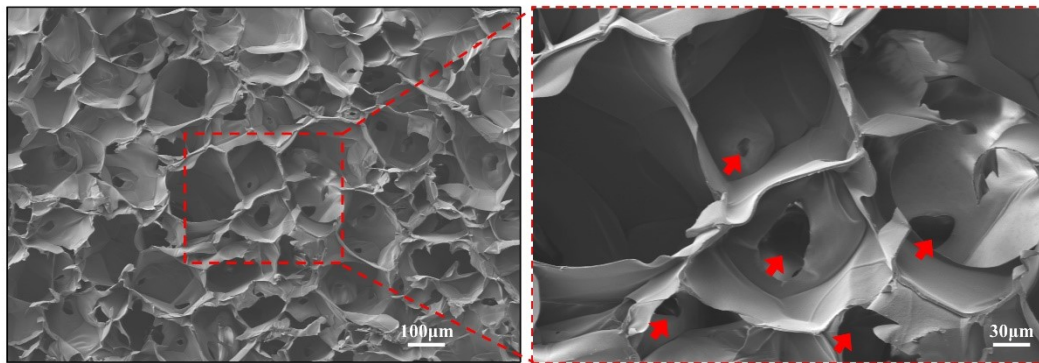


Fig. S2 Porous structure of the gelatin hydrogel. The red arrows points to the pores of the freeze-dried gelatin hydrogel.